

## PATENT SPECIFICATION

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## COMPLETE SPECIFICATION.

## Improvements in Hair-Dye Compositions.

I, ARTHUR HAROLD STEVENS, British Subject, of the firm of Stevens, Langner, Parry and Rollinson, Chartered Patent Agents, of 5-9, Quality Courts, Chancery Lane, London, W.C.2, do hereby declare the nature of this invention (communication from L'Oreal Societe Anonyme, a Company organised under the laws of France, of 14 rue Royale, Paris, France), and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

Hair-dyes generally used currently contain oxidizable bases such as paraphenylenediamine, aminophenols or a mixture of substances so selected that they are adapted, through subsequent oxidizing on the fibre, to give rise to the formation of colouring materials of the indamine, indophenol, azinic and the like types.

Because of their inherent character such solutions are easily oxidizable in the atmosphere and rapidly deteriorate. To overcome this drawback, such solutions usually have added thereto reducing agents such as sodium bisulfite, hydrosulfites, and the like. Such agents however offer the drawback of being detrimental to the preservation or storage characteristics of dying creams.

The applicant has discovered that the thio-reducing agents offer the advantage of affording better protection to the dye solution against oxidizing, without interfering with satisfactory storage properties of dye creams. An object of the present invention is to apply said thio-reducers to hair-dyes in order to ensure proper preservation thereof. Another object is to provide the new product of manufacture formed by a hair-dye embodying in its composition a thio-reducer serving the function of an antioxidant.

Thio-reducers suitable for carrying out the invention may, merely by way of indication and without in any way intending to restrict the scope of the invention,

comprise:

(a) Non polar mercaptans such as thio-glycerol, thio-tetraglycol, the dimercaptans (polymercaptans), polythioglycols in general;

(b) Mercaptans substituted with an acidic group (thio-glycolic acid, thio-glyceric acid, polythiomucic acid, mercapto-succinic acid, thiocitric acid and the like);

(c) Mercaptans substituted with a basic group (mercapto-ethylguanidine, mercapto-ethylaurine, and the like), and other suitable thio-reducers.

At the same time, according to a feature of the invention, the electrolytes or polar constituents (which are more or less detrimental to a uniform colour rise and penetration of the dye) are reduced to a minimum through the use as dye bases of only weak electrolytes derived from amines, diamines, phenols and aminophenols.

Some examples of liquid dye compositions will now be given to serve as an illustration of the manner in which the invention may be carried into practice and without any intention of restricting the scope thereof.

## EXAMPLE 1 (BLACK).

|                       |        |    |
|-----------------------|--------|----|
| Paraphenylene diamine | 2.5 g  |    |
| Aminodiphenylamine    | 0.2 g  |    |
| 20% ammonia solution  | 10 cc  | 80 |
| Thioglycolic acid     | 0.15 g |    |
| Water to make         | 100 cc |    |

## EXAMPLE 2 (BROWN)

|                       |        |    |
|-----------------------|--------|----|
| Paratoluylene diamine | 2.5 g  |    |
| Para-aminophenol      | 1 g    | 85 |
| 20% ammonia solution  | 10 cc  |    |
| Thioglycolic acid     | 0.1 g  |    |
| Water to make         | 100 cc |    |

## EXAMPLE 3 (BLOND)

|                       |        |    |
|-----------------------|--------|----|
| Paraphenylene diamine | 1.5 g  | 90 |
| Paraaminophenol       | 0.8 g  |    |
| Ammonia solution      | 10 cc  |    |
| Thioglycolic acid     | 0.1 g  |    |
| Water to make         | 100 cc |    |

It is desirable to add to the above formulae a wetting agent and a thickener

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to facilitate the application of the dye composition and which preferably do not contain any inorganic salts.

The above defined compositions may serve as the starting point for the manufacture of dye creams. The substantial reduction in electrolyte content and the use of a thio-reducer which both constitute the essential features of the invention make it possible to prepare creams that are stable, having a colour ranging from white to pink and the commercial appearance of which remains constant with time.

The dye can contain, in dispersion, products for treating the hair.

Moreover, it is possible to disperse in such dye compositions in the form of creams products such as lecithine, cholesterol, vitamins and the like, for which they form an ideal vehicle.

In using such dye creams, it is simply necessary at the time of use to add thereto just as in the conventional procedure, hydrogen peroxide at 20 volume concentration or any other equivalent oxidizer.

Some examples of dye creams prepared according to the invention will now be given.

#### EXAMPLE 4

|    |  |        |
|----|--|--------|
| 30 | Emulsionizable propylene glycol stearate   | 5 g    |
|    | Cholesterol  | 0,2 g  |
|    | Vitamin F  | 0,05 g |
|    | Distilled water  | 51 cc  |
| 35 | An ammonia solution of oxidizing pigments depending on the desired tint (as see examples 1 to 3) | 55 cc  |
| 40 | Thioglycolic acid  | 0,2 g  |

#### EXAMPLE 5

|    |  |        |
|----|--|--------|
|    | Emulsionizable cetyl-oleic alcohol   | 10 g   |
|    | Cholesterol  | 0,2 g  |
| 45 | Vitamin F  | 0,05 g |
|    | Water  | 50 cc  |
|    | Ammonia solution of pigments according to the desired tint (see examples 1 to 3) | 55 cc  |
| 50 | Thioglycolic acid  | 0,2 g  |

Particularly in the case of cream dyes it is essential to reduce to a minimum the electrolyte content. On the other hand it is possible to produce a liquid dye which does contain electrolytes and still exhibits the improved qualities secured by the present invention, on condition there is incorporated therein a substantial amount of thio-reducers: the specific proportions indicated in the above examples are by no

means critical and the thioglycolic acid content for instance may be varied in the range of from 0.1 to 1% in weight. The other thio-reducers may be employed in quantities having an equivalent reducing power.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An improved hair-dye composition having improved storage qualities, characterised in that it comprises as dye bases only weak electrolytes derived from amines, diamines, phenols, amino-phenols and an organic thio-reducing agent as a safe keeping means.

2. A hair-dye composition with improved storage qualities which comprises an organic thio-reducing agent incorporated therein in a quantity having a reducing power substantially equivalent to 0,1% to 1% by weight of thioglycolic acid.

3. An improved hair-dye composition as in Claim 1 wherein said thio-reducer is a mercaptan.

4. An improved hair-dye composition as in Claim 3 wherein said mercaptan is a non-polarized mercaptan.

5. An improved hair-dye composition as in Claim 3 wherein said mercaptan is a mercaptan substituted by an acidic group.

6. An improved hair-dye composition as in Claim 3 wherein said mercaptan is a mercaptan substituted by a basic group.

7. An improved stable hair-dye cream having improved storage qualities characterised in that it comprises a thio-reducer as in any of the Claims from 1 to 6 and wherein the electrolyte content is reduced to a minimum through the use of free amines, diamines, phenols and amino-phenols.

8. An improved stable hair-dye cream composition as in Claim 7, further characterised in that it incorporates hair-treating products dispersed therein.

9. Improvements in hair-dye compositions substantially as described in the specification.

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